



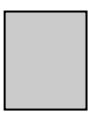




The choice of the application system depends on several points:

- **Object**
 The size and the shape of the component
 Quality requirements
- **Legislation**
 VOC or other local rules
- **Paint system**
 Material e.g. Primer or Topcoat.
 Material e.g. Structure, Texture, highly fluid, viscous.
- **Sprayer (Painter)**
 Speed of work
 Work habits

Overview of the “normal“ spray application tools		
Procedure	Pressure	Atomisation
Extreme pressure (Without air support)	 Material pressure 100-250 bar (<550 bar)	
Extreme pressure (With air support)	 Material pressure 20-150 bar	
Electrostatic (Extreme and high pressure)	 Material pressure 3-50 bar	
High pressure	 Material pressure 3-10 bar	
Optimizes high pressure	 Material pressure 2-2,5 bar	
Low pressure ("HVLP", "LVLP")	 Material pressure max. 0,7 bar	

Other Manufacturer designation for:

Extreme pressure without air support: Airless

Extreme pressure with air support: Airmix, Air-Coat, Spraymix, Air-Combi, Airless-Plus....

Low pressure application:

In the HVLP air spray process (High Volume Low Pressure, i.e. high air volume at low pressure), the coating material is sprayed with low air pressure (anywhere from 0.2 bar to 0.7 bar) and a high air volume. The HVLP requires an air flow of about 400-800 l/min (in some cases up to 2000 l/min), which is produced by a piston or screw compressor.

The LVLP air spraying process (Low Volume Low Pressure), a further development of the HVLP process, requires significantly smaller airflow volumes. In relation to the HVLP process, the air volume with LVPL can be reduced by nearly 40%.

High pressure application:

In high-pressure spraying, the coating/paint material is sprayed with an air pressure of 2-10 bar, depending on the method. The required amount of air is between 300-500 l/min, and the air is usually generated by a compressor. The transfer rate is set at 35-65%, depending on the application. Adjustable spray guns are perfect for the use of low-viscosity media. The use of high-viscosity media, however, is rather limited. Another feature is the fine atomization and excellent surface quality.

High Pressure application is available through:

- Gravity flow cup or suction spray gun
- Pressure-fed spray gun with pressure tank as material feeding (air/paint material via hoses)
- Pressure-fed spray gun with pneumatic pump as material feeding (air/paint material via hoses)
- Automatic spray devices with pressure tank or pneumatic pump

Extreme pressure application:

Airless spray includes both high pressure and low pressure spraying. The fluid pressure is usually between 100 and 250 bar, but up to 550 bar is also possible. With the use of spray pressure and spray apparatus, the coating medium is forced through a die measuring 0.18 to 1.65 mm, producing a finely atomized spray pattern. The benefits are: lower media consumption as compared to compressed air spraying, high working rates, fast finishes in large areas and less overspray across from other spraying. Viscosity materials can be easily processed and can be applied in single thick layers. With Spraymix or Airmix spraying (air-supported airless spraying) the coating medium is atomized at a lower bar pressure of 20-150 bar. The airless spray pattern is supported with air from 0.5 to 2.0 bar, therefore the pressure is "softer". The risk of edge banding is greatly reduced.

Both systems are designed for use with large objects. Small objects can be processed to a limited extent only.

Electrostatic application:

The electrostatic coating method uses a high voltage field of 20 - 150kV. This requires a pump or a pressure vessel plus a control unit converting the alternating current into direct current and low voltage via a 3V to 12V cable to the high voltage generator in the electrostatic spray gun. The integrated electronic system in the control unit clears the electrical voltage to the gun only when the trigger is pulled to release the atomizing air to the gun. Conditions to be considered are the electrical surface resistance of the component itself and the electrical conductivity of the paint. The paint's electrical resistance must be at least 5MΩ.cm. Non-conductive coating materials can be applied, however the transfer efficiency is significantly reduced. The paint droplets are negatively charged by the high voltage electrostatic spray gun and they move along the electrostatic field lines to the positively charged or grounded component surface.

Where possible, the object is moved to create a uniform coating surface. The advantages of this method are the low loss of paint material with no overspray, time savings, as well as reduced cleaning intervals of the spraying tools. The uniform coating has a thickness of 60-80µm.

Special precautions must be taken with the electrostatic application of waterborne paints.

Usual application facts:

For more detailed information refer to the manufacturer's instructions!

	Spray distance	Input pressure	Atomisation pressure	Transmission rate
HVLP/LVLP	10-15 cm / 4" – 6"	max. 2 bar / 29 psi	0,7 bar / 10 psi	> 65%
Optimizes high pressure	18-23 cm / 6" – 8"	2,2 bar / 32 psi	1,8 bar / 26 psi	> 65%
High pressure	25 cm / 10"	max. 5 bar / 72 psi	4,5 bar / 65 psi	~ 35-40%
Extreme pressure with air support	10-23 cm / 4" - 8"	max.8 bar / 116 psi	Air support 0,5 -2,5 bar Material pressure 20 – 150 bar	~ 70-75%
Extreme pressure without air support	20-30 cm / 7" – 12"	--	Material pressure 100 – 250 bar	~ 75-80%
Electrostatic (depending on the system)	20-50 cm / 7" – 18"	Depending on the procedure	Depending on the procedure	~ 80-90%

In addition, consider the manufacturer's information and instructions in order to avoid application mistakes.

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